

CHANGE REQUEST

23.334 **CR 0039** rev **4** **Current version:** **12.3.0**

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<http://www.3gpp.org/Change-Requests>.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	Support of RTP transport multiplexing (Iq, stage 2)		
Source to WG:	Alcatel-Lucent		
Source to TSG:	CT4		
Work item code:	RTCP-MUX	Date:	2014-05-04
Category:	B	Release:	Rel-12
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		Rel-4 (Release 4)
	A (mirror corresponding to a change in an earlier release)		Rel-5 (Release 5)
	B (addition of feature),		Rel-6 (Release 6)
	C (functional modification of feature)		Rel-7 (Release 7)
	D (editorial modification)		Rel-8 (Release 8)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-9 (Release 9)
			Rel-10 (Release 10)
			Rel-11 (Release 11)
			Rel-12 (Release 12)
			Rel-13 (Release 13)

Reason for change:	An UE may request usage of RTP transport multiplexing (via SIP signalling). When RTP transport multiplexing is supported by the IMS-AGW, then the IMS-ALG needs to control RTP transport multiplexing during the creation of H.248 termination. The transport multiplexed mode is optional, the existing transport unmultiplexed mode is mandatory. In order to add optional support for RTP transport multiplexing, following aspects need to be addressed (in clause 5.9): 1. Multiplexing mode: separate clauses for <ul style="list-style-type: none"> • "transport unmultiplexed mode" and • "transport multiplexed mode"; 2. Symmetry assumptions in case of multiplexed mode: none.
Summary of change:	Addition of optional RTP transport multiplexing capability.
Consequences if not approved:	An UE would have to use the default of unmultiplexed RTP / RTCP, which double the number of required UDP transport connections, and could reduce the likelihood of successful NAT traversal.

Clauses affected:	2, 3.1, 5.9, 6.2.1, 6.2.9, 8.2, 8.3		
Other specs affected: (show related CRs)	<input type="checkbox"/> Y <input type="checkbox"/> N		
	<input checked="" type="checkbox"/> Y	Other core specifications	TS/TR 29.334 CR ...
	<input checked="" type="checkbox"/> X	Test specifications	TS/TR ... CR ...
	<input checked="" type="checkbox"/> X	O&M Specifications	TS/TR ... CR ...
Other comments:	NOTE: This CR is a spin-off from former proposal C4-140776. It was requested to split the CR in two separate CRs (see also information in INFO C4-140870): 1. C4-140839 (CR#47) and 2. C4-140844 (CR#39) (this document). Consequently, CR#39 provides changes (marked by "CR39" on top of CR#47 (marked by "ALU")).		

* * * First Change * * * *

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS), stage 2".
- [3] 3GPP TS 29.334: "IMS Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW) Iq interface, stage 3".
- [4] IETF RFC 2663: "IP Network Address Translator (NAT) Terminology and Considerations".
- [5] 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".
- [6] IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) Bandwidth".
- [7] IETF RFC 3605: "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)".
- [8] 3GPP TS 23.205: "Bearer independent circuit-switched core network; Stage 2".
- [9] ITU-T Recommendation H.248.1 (05/2002): "Gateway Control Protocol: Version 2" including the Corrigendum1 for Version 2 (03/04).
- [10] IETF RFC 2216: "Network Element Service Template".
- [11] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP".
- [12] 3GPP TS 33.328: "IMS Media Plane Security".
- [13] IETF RFC 4568: "Session Description Protocol (SDP) Security Descriptions for Media Streams".
- [14] IETF RFC 3711: "The Secure Real-time Transport Protocol (SRTP)".
- [15] IETF RFC 5124: "Extended Secure RTP Profile for Real-time Transport Control Protocol (RTCP)-Based Feedback (RTP/SAVPF)".
- [16] IETF RFC 3168: "The Addition of Explicit Congestion Notification (ECN) to IP".
- [17] IETF RFC 6679: "Explicit Congestion Notification (ECN) for RTP over UDP".
- [18] 3GPP TS 23.237: "IP Multimedia subsystem (IMS) Service Continuity; Stage 2".
- [19] 3GPP TS 24.237: "IP Multimedia subsystem (IMS) Service Continuity; Stage 3".
- [20] 3GPP TS 29.162: "Interworking between the IM CN subsystem and IP networks".

- [21] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".
- [22] 3GPP TS 22.153: "Multimedia Priority Service".
- [23] IETF RFC 5285: "A General Mechanism for RTP Header Extensions".
- [24] IETF RFC 6236: "Negotiation of Generic Image Attributes in the Session Description Protocol (SDP)".
- [x1] Draft ITU-T Recommendation H.248.57 (xx/2014): "Gateway control protocol: RTP Control Protocol Package".

Editor's Note: The above document cannot be formally referenced until it is published as an ITU-T Recommendation.

[x2] [IETF RFC 5761: "Multiplexing RTP Data and Control Packets on a Single Port"](#).

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3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

Network Address Translation (NA(P)T): see definition in 3GPP TS 23.228 [2].

NAT-PT/NAPT-PT: see definition in 3GPP TS 23.228 [2].

Local (near-end) NAPT control: the operation of providing network address mapping information and NAPT policy rules to a near-end NAT in the media flow.

Remote (far-end) NAT traversal: the operation of adapting the IP addresses so that the packets in the media flow can pass through a far-end (remote) NAT.

NAPT control and NAT traversal: controls network address translation for both near-end NA(P)T and far-end NA(P)T

Convention:

Wherever the **term NAT** is used in this specification, it may be replaced by **NA(P)T or NA(P)T-PT**.

RTP / RTCP transport multiplexing: a single IP transport (L4) port for RTP and RTCP packets.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.237 [18] apply:

Access Leg
Access Transfer Control Function (ATCF)
Access Transfer Gateway (ATGW)
Remote Leg
Target Access Leg
Source Access Leg

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5.9 Handling of RTCP streams

5.9.x1 RTCP port allocation

5.9.x1.1 MGC information baseline for RTCP port allocation decisions

The SIP/SDP signalling provides the primary information for gateway control decisions (H.248 signalling) by the MGC. Additional MGC-local policies (related to operator preferences, regulatory services, etc) may provide complementary information for RTCP port allocation control.

5.9.x1.2 Information and signalling elements

There is following relation (Table 5.9.2.1.x1) between information and signalling elements (see also NOTE in clause 8.1):

Table 5.9.2.1.x1: RTCP port allocation - Information and signalling elements

Information element	Signalling element	Reference
RTCP handling	H.248 property: "rtcp/rsb"	ITU-T Recommendation H.248.57 [x1]
explicit RTCP transport address	SDP attribute: "a=rtcp"	IETF RFC 3605 [7]
<u>RTP / RTCP transport multiplexing</u>	<u>SDP attribute:"a=rtcp-mux"</u>	<u>IETF RFC 5761 [x2]</u>

5.9.x1.3 Requirements due to possible rule interactions

There are the two functional requirements concerning the RTCP port allocation rules as such, with respect to unambiguity and backward compatibility (versus older profile versions). Whenever ambiguity is concluded by the IMS-ALG or IMS-AGW, then RTCP port allocation rules are required to be consistent with ITU-T Recommendation H.248.57 [x1] (which takes precedence in case of discrepancies between H.248 profile and H.248 protocol specifications),

5.9.x1.2 RTCP port allocation for transport unmultiplexed traffic

5.9.x1.2.1 Local endpoint

The IMS-ALG and the IMS-AGW shall support control via the Iq interface of the specific RTCP behaviour associated to an RTP flow.

When the IMS-ALG requests the IMS-AGW to reserve transport addresses/resources for an RTP flow, the IMS-ALG should also request the IMS-AGW to reserve resources for the corresponding RTCP flow, but may alternatively request the IMS-AGW not to reserve resources for the corresponding RTCP flow. When the IMS-ALG requests the IMS-AGW to reserve transport addresses/resources for a non-RTP flow, the IMS-ALG shall not request the IMS-AGW to reserve resources for an RTCP flow.

To request the IMS-AGW to reserve resources for an RTCP flow, the IMS ALG shall provide the RTCP handling information element with a value indicating that resources for RTCP shall be reserved.

To request the IMS-AGW not to reserve resources for an RTCP flow, the IMS ALG shall either provide the RTCP handling information element with a value indicating that resources for RTCP shall not be reserved or omit the RTCP handling information element (which implies the default semantic of "not reserved").

If the IMS-AGW receives the indication to reserve RTCP resources, the IMS-AGW shall allocate a local port with even number for an RTP flow also reserve the consecutive local port with odd number for the associated RTCP flow, and it shall send and be prepared to receive RTCP.

If the IMS-AGW receives the indication to not reserve RTCP resources, or if it does not receive any indication at all, it shall not allocate an RTCP port when allocating a port for an RTP flow. The IMS-AGW shall not send any RTCP packets and shall silently discard any received RTCP packets.

5.9.x1.2.2 Remote endpoint

When local RTCP resources (concerning remote endpoint information) are requested (according to previous clause 5.9.x1.2.1), the IMS-ALG may also specify:

- the remote RTCP port, and optionally the remote address, where to send RTCP packets; if not specified, the IMS-AGW shall send RCTP packets to the port contiguous to the remote RTP port;
- bandwidth allocation requirements for RTCP, if the RTCP bandwidth level for the session is different than the default RTCP bandwidth as specified in RFC 3556 [6].

NOTE: In line with the recommendations of RFC 3605 [7], separate address or non-contiguous RTCP port numbers will not be allocated by the IMS-ALG / IMS-AGW. The explicit RTCP transport address information element (as specified in IETF RFC 3605 [7]) is only allowed for remote endpoints (in case of IMS) and shall be not used for the local endpoint. When the IMS-ALG requests the IMS-AGW to reserve resources for an RTCP flow and provides in addition the explicit RTCP port information element, then the IMS-AGW shall allocate the requested port number ("which is a separate address or non-contiguous RTCP port number").

5.9.x1.2.3 Error cases

The IMS-AGW shall return an error if it can not allocate the requested RTCP resources.

5.9.x1.3 RTCP port allocation for RTCP/RTP transport multiplexed traffic

5.9.x1.3.1 Local endpoint

To request the IMS-AGW to reserve resources for an RTCP flow in the optional RTP / RTCP transport multiplexing mode, the IMS ALG

- shall provide the RTCP handling information element and the RTP / RTCP transport multiplexing information element (as specified in IETF RFC 5761 [x2]).

5.9.x1.3.2 Remote endpoint

RTCP port allocation rules shall be accordingly as in clause 5.9.x1.3.1. There are not any symmetry assumptions which would enforce the same multiplexing mode a) per traffic direction or/and b) per location.

5.9.x1.3.3 Error cases

See clause 5.9.x1.2.3.

5.9.x2 Bandwidth allocation

When RTCP resources are requested, the IMS-ALG may also specify:

- bandwidth allocation requirements for RTCP, if the RTCP bandwidth level for the session is different than the default RTCP bandwidth as specified in IETF RFC 3556 [6].

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6.2.9 Handling of RTCP streams

This procedure is identical to that of subclause 6.2.1 apart from the IMS-ALG optionally requesting the IMS-AGW to allocate or not allocate RTCP resources, and if RTCP is requested,

- optionally specifying the explicit remote RTCP port and transport address for the remote endpoint (see clause 5.9.x1.2.2),
- optionally specifying the RTP / RTCP transport multiplexing information (see clause 5.9.x1.3)

and bandwidth allocation for RTCP.

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8.2 Reserve and Configure AGW Connection Point

This procedure is used to reserve multimedia-processing resources for the Iq interface connection.

Table 8.2.1: Procedures between IMS-ALG and IMS-AGW: Reserve and Configure AGW Connection Point

Procedure	Initiated	Information element name	Information element required	Information element description
Reserve and Configure AGW Connection Point	IMS-ALG	Context/Context Request	M	This information element indicates the existing context or requests a new context for the bearer termination.
		Emergency Call Indicator	O	This information element identifies the call as emergency call that requires a preferential handling.
		Priority information	O	This information element requests the IMS-AGW to apply priority treatment for the terminations and bearer connections in the specified context.
		Bearer Termination Request	M	This information element indicates the existing bearer termination or requests a new bearer termination for the bearer to be established.
		Local IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall be prepared to receive user data. May be excluded (i.e. "-" is used in SDP m-line) if no transcoding or media related functions are required. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream.
		ReserveValue	O	This information element indicates if multiple local resources are to be reserved. This information element shall be included if a speech codec and auxiliary payload types are configured.
		Remote IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall send data. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream. May be excluded (i.e. "-" is used in SDP m-line) if no transcoding or media related functions are required.
Local Connection Address Request	M	This information element requests an IP address and port number(s) on the IMS-AGW that the remote end can send user plane data to. For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.		

		Remote Connection Address	M	<p>This information element indicates the remote IP address and port number(s) that the IMS-AGW can send user plane data to.</p> <p>For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.</p>
		Notify termination heartbeat	M	This information element requests termination heartbeat indications. This information element shall be included when requesting a new bearer termination. Otherwise the information element is optional.
		Notify Released Bearer	O	This information element requests a notification of a released bearer.
		Latching Requirement	O	This information element indicates that the IMS-AGW should (re)latch onto the address of received media packets to determine the corresponding destination address.
		IP Realm Identifier	O	This information element indicates the IP realm of the bearer termination.
		Remote Source Address Filtering	O	This information element indicates that remote source address filtering is required.
		Remote Source Address Mask	C	This information element provides information on the valid remote source addresses. This is required if a range of remote source address filtering is required.
		Remote Source Port Filtering	O	This information element indicates that remote source port filtering is required.
		Remote Source Port	C	This information element identifies the valid remote source port. This may be included if remote source port filtering is included. (NOTE 1)
		Remote Source Port Range	C	This information element identifies a range of valid remote source ports. This may be included if remote source port filtering is included. (NOTE 1)
		Traffic Policing Required	O	This information element indicates that policing of the media flow is required.
		Peak Data Rate	O	This information element may be present if Policing is required and specifies the permissible peak data rate for a media stream. (NOTE 2)..
		Sustainable Data Rate	O	This information element may be present if Policing is required and specifies the permissible sustainable data rate for a media stream. (NOTE 2).
		Delay Variation Tolerance	O	This information element may be present if Policing on Peak Data Rate is required and specifies the maximum expected delay variation tolerance for the corresponding media stream.
		Maximum Burst Size	C	This information element shall be present if Policing on Sustainable Data Rate is required and specifies the maximum expected burst size for the corresponding media stream.
		DiffServ Code Point	O	This information element indicates a specific DiffServ code point to be used in the IP header in packets sent on the bearer termination.
		DiffServ Tagging Behaviour	O	This information element indicates whether the Diffserv code point in the IP header in packets sent on the bearer termination shall be copied from the received value or set to a specific value.
		Media Inactivity Detection Required	O	This information element indicates that detection of inactive media flows is required.

		Media Inactivity Detection Time	C	This information element may be present if Inactive Media Detection is required and specifies the Inactivity Detection time.
		Media Inactivity Detection Direction	C	This information element may be present if Inactive Media Detection is required and specifies the Inactivity Detection direction.
		RTCP handling	O	This information element is present if IMS-ALG wants explicitly control the reservation of RTCP resources by the IMS-AGW.
		explicit RTCP transport address	O	This information element is present if IMS-ALG wants explicitly control the reservation of RTCP transport address resources (for the remote endpoint) by the IMS-AGW.
		<u>RTP / RTCP transport multiplexing</u>	<u>O</u>	<u>This information element is present if IMS-ALG wants explicitly control the reservation of transport multiplexed RTP/RTCP port resources by the IMS-AGW.</u>
		Local cryptographic SDES attribute	C	This information element is present if IMS-ALG wants that the media is encrypted and/or integrity protected by the IMS-AGW (NOTE 3). It indicates the SDES local cryptographic parameters such as key(s)
		Remote cryptographic SDES attribute	C	This information element is present if IMS-ALG wants that the media is decrypted, and/or integrity checked by the IMS-AGW (NOTE 3). It indicates the SDES remote cryptographic parameters such as key(s)
		ECN Enable	O	This information element requests the IMS-AGW to apply ECN procedures.
		ECN Initiation Method	C	This information element specifies the ECN Initiation method and requests the IMS-AGW to perform IP header settings as an ECN endpoint, or indicates that ECN bits shall be passed transparently. It may be included only if ECN is enabled.
		Notify ECN Failure Event	C	This information element requests a notification if a ECN failure occurs due to ECN. It may only be supplied if ECN is enabled and the IMS-AGW acts as ECN endpoint.
		Extended RTP Header for CVO	O	This information element requests the IMS-AGW to pass on the CVO extended RTP header as defined by IETF RFC 5285 [23].
		Generic Image Attributes	O	This information element indicates image attributes (e.g. image size) as defined by IETF RFC 6236 [24].
Reserve and Configure AGW Connection Point Ack	IMS-AGW	Context	M	This information element indicates the context where the command was executed.
		Bearer Termination	M	This information element indicates the bearer termination where the command was executed.
		Local IP Resources	C	This information element indicates the resource(s) for which the IMS-AGW shall be prepared to receive user data. This IE shall be present if it was contained in the request. If the IE was not contained in the request, it may be present in the reply. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream.

		Remote IP Resources	O	<p>This information element indicates the resource(s) for which the IMS-AGW shall send data.</p> <p>For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream.</p>
		Local Connection Address	M	<p>This information element indicates the IP address and port number(s) the IMS-AGW shall receive user plane data from IMS.</p> <p>For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.</p>
		Remote Connection Address	O	<p>This information element indicates the remote IP address and port number(s) that the IMS-AGW can send user plane data to.</p> <p>For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.</p>
		Local cryptographic SDES attribute	C	<p>This information element may be present only if it was contained in the request. It indicates the SDES local cryptographic parameters such as key(s)</p>
		Remote cryptographic SDES attribute	C	<p>This information element may be present only if it was contained in the request. It indicates the SDES remote cryptographic parameters such as key(s)</p>

NOTE 1: Remote Source Port and Remote Source Port Range are mutually exclusive.

NOTE 2: One of those IEs shall at least be present when policing is required.

NOTE 3: This IE may only be present for access network terminations.

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8.3 Reserve AGW Connection Point Procedure

This procedure is used to reserve local connection addresses and local resources in IMS-AGW.

Table 8.3.1: Procedures between IMS-ALG and IMS-AGW: Reserve AGW Connection Point

Procedure	Initiated	Information element name	Information element required	Information element description
Reserve AGW Connection Point	IMS-ALG	Context /Context Request	M	This information element indicates the existing context or requests a new context for the bearer termination.
		Emergency Call Indicator	O	This information element identifies the call as emergency call that requires a preferential handling.
		Priority information	O	This information element requests the IMS-AGW to apply priority treatment for the terminations and bearer connections in the specified context.
		Bearer Termination Request	M	This information element requests a new bearer termination
		Local IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall be prepared to receive user data. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream. May be excluded (i.e. "-" is used in SDP m-line) if no transcoding or media related functions are required.
		ReserveValue	O	This information element indicates if multiple local resources are to be reserved. This information element shall be included if a speech codec and auxiliary payload types are configured.
		Local Connection Address Request	M	This information element requests an IP address and port number(s) on the IMS-AGW that the remote end can send user plane data to. For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.
		Notify termination heartbeat	M	This information element requests termination heartbeat indications.
		Notify Released Bearer	O	This information element requests a notification of a released bearer.
		Latching Requirement	O	This information element indicates that the IMS-AGW should (re)latch onto the address of received media packets to determine the corresponding destination address.
		IP Realm Identifier	O	This information element indicates the IP realm of the bearer termination.
		Remote Source Address Filtering	O	This information element indicates that remote source address filtering is required.
Remote Source Address Mask	C	This information element provides information on the valid remote source addresses. This is required if a range of remote source address filtering is required.		

		Remote Source Port Filtering	O	This information element indicates that remote source port filtering is required.
		Remote Source Port	C	This information element identifies the valid remote source port. This may be included if remote source port filtering is included. (NOTE 1)
		Remote Source Port Range	C	This information element identifies a range of valid remote source ports. This may be included if remote source port filtering is included. (NOTE 1)
		Policing Required	O	This information element indicates that policing of the media flow is required.
		Peak Data Rate	O	This information element may be present if Policing is required and specifies the permissible peak data rate for a media stream. (NOTE 2).
		Sustainable Data Rate	O	This information element may be present if Policing is required and specifies the permissible sustainable data rate for a media stream. (NOTE 2).
		Delay Variation Tolerance	O	This information element may be present if Policing on Peak Data Rate is required and specifies the maximum expected delay variation tolerance for the corresponding media stream.
		Maximum Burst Size	C	This information element shall be present if Policing on Sustainable Data Rate is required and specifies the maximum expected burst size for the corresponding media stream.
		DiffServ Code Point	O	This information element indicates a specific DiffServ code point to be used in the IP header in packets sent on the bearer termination.
		DiffServ Tagging Behaviour	O	This information element indicates whether the Diffserv code point in the IP header in packets sent on the bearer termination should be copied from the received value or set to a specific value.
		Media Inactivity Detection Required	O	This information element indicates that detection of inactive media flows is required.
		Media Inactivity Detection Time	C	This information element may be present if Inactive Media Detection is required and specifies the Inactivity Detection time.
		Media Inactivity Detection Direction	C	This information element may be present if Inactive Media Detection is required and specifies the Inactivity Detection direction.
		RTCP handling	O	This information element is present if IMS-ALG wants explicitly control the reservation of RTCP resources by the IMS-AGW.
		explicit RTCP transport address	O	This information element is present if IMS-ALG wants explicitly control the reservation of RTCP transport address resources (for the remote endpoint) by the IMS-AGW.
		<u>RTP / RTCP transport multiplexing</u>	<u>O</u>	<u>This information element is present if IMS-ALG wants explicitly control the reservation of transport multiplexed RTP/RTCP port resources by the IMS-AGW.</u>
		Local cryptographic SDES attribute	C	This information element is present if IMS-ALG wants that the media is encrypted and/or integrity protected by the IMS-AGW (NOTE 3). It indicates the SDES local cryptographic parameters such as key(s).
		ECN Enable	O	This information element requests the IMS-AGW to apply ECN procedures.

		ECN Initiation Method	C	This information element specifies the ECN Initiation method and requests the IMS-AGW to perform IP header settings as an ECN endpoint, or indicates that ECN bits shall be passed transparently. It may be included only if ECN is enabled.
		Notify ECN Failure Event	C	This information element requests a notification if a ECN failure occurs due to ECN. It may only be supplied if ECN is enabled and the IMS-AGW acts as ECN endpoint.
		Extended RTP Header for CVO	O	This information element requests the IMS-AGW to pass on the CVO extended RTP header as defined by IETF RFC 5285 [23].
		Generic Image Attributes	O	This information element indicates image attributes (e.g. image size) as defined by IETF RFC 6236 [24].
Reserve AGW Connection Point Ack	IMS-AGW	Context	M	This information element indicates the context where the command was executed.
		Bearer Termination	M	This information element indicates the bearer termination where the command was executed.
		Local IP Resources	C	This information element indicates the resource(s) for which the IMS-AGW shall be prepared to receive user data. This IE shall be present if it was contained in the request. If the IE was not contained in the request, it may be present in the reply. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream.
		Local Connection Address	M	This information element indicates the IP address and port number(s) the IMS-AGW shall receive user plane data from IMS. For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.
		Local cryptographic SDES attribute	C	This information element may be present only if it was contained in the request. It indicates the SDES local cryptographic parameters such as key(s)
<p>NOTE 1: Remote Source Port and Remote Source Port Range are mutually exclusive.</p> <p>NOTE 2: One of those IEs shall at least be present when policing is required.</p> <p>NOTE 3: This IE may only be present for access network terminations, and only if the IMS-ALG includes only one SDES crypto attribute in the SDP sent towards the served UE.</p>				

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8.4 Configure AGW Connection Point Procedure

This procedure is used to select or modify multimedia-processing resources for the Iq interface connection.

Table 8.4.1: Procedures between IMS-ALG and IMS-AGW: Configure AGW Connection Point

Procedure	Initiated	Information element name	Information element required	Information element description
Configure AGW Connection Point	IMS-ALG	Context	M	This information element indicates the context for the bearer termination.
		Priority information	O	This information element shall be present if the priority information needs to be modified, it may be present otherwise.
		Bearer Termination	M	This information element indicates the existing bearer termination.
		Local IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall be prepared to receive user data. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream. May be excluded (i.e. "-" is used in SDP m-line) if no transcoding or media related functions are required.
		Remote IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall send data. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream. May be excluded (i.e. "-" is used in SDP m-line) if no transcoding or media related functions are required.
		Local Connection Address	O	This information element indicates the IP address and port number(s) on the IMS-AGW that the IMS user can send user plane data to. For terminations supporting video any combination of video, audio and messaging may contain multiple addresses.
		Remote Connection Address	O	This information element indicates the remote IP address and port number(s) that the IMS-AGW can send user plane data to. For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.
		Latching Requirement	O	This information element indicates that the IMS-AGW should (re)latch onto the address of received media packets to determine the corresponding destination address.
		IP Realm Identifier	O	This information element indicates the IP realm of the bearer termination. (NOTE 3)

		Remote Source Address Filtering	O	This information element indicates that remote source address filtering is required.
		Remote Source Address Mask	C	This information element provides information on the valid remote source addresses. This is required if a range of remote source address filtering is required.
		Remote Source Port Filtering	O	This information element indicates that remote source port filtering is required.
		Remote Source Port	C	This information element identifies the valid remote source port. This may be included if remote source port filtering is included. (NOTE 1)
		Remote Source Port Range	C	This information element identifies a range of valid remote source ports. This may be included if remote source port filtering is included. (NOTE 1)
		Policing Required	O	This information element indicates that policing of the media flow is required.
		Peak Data Rate	O	This information element may be present if Policing is required and specifies the permissible peak data rate for a media stream. (NOTE 2).
		Sustainable Data Rate	O	This information element may be present if Policing is required and specifies the permissible sustainable data rate for a media stream. (NOTE 2).
		Delay Variation Tolerance	O	This information element may be present if Policing on Peak Data Rate is required and specifies the maximum expected delay variation tolerance for the corresponding media stream.
		Maximum Burst Size	C	This information element shall be present if Policing on Sustainable Data Rate is required and specifies the maximum expected burst size for the corresponding media stream.
		DiffServ Code Point	O	This information element indicates a specific DiffServ code point to be used in the IP header in packets sent on the bearer termination.
		DiffServ Tagging Behaviour	O	This information element indicates whether the Diffserv code point in the IP header in packets sent on the bearer termination should be copied from the received value or set to a specific value.
		Media Inactivity Detection Required	O	This information element indicates that detection of inactive media flows is required.
		Media Inactivity Detection Time	C	This information element may be present if Inactive Media Detection is required and specifies the Inactivity Detection time.
		Media Inactivity Detection Direction	C	This information element may be present if Inactive Media Detection is required and specifies the Inactivity Detection direction.

		RTCP handling	O	This information element is present if IMS-ALG wants explicitly control the reservation of RTCP resources by the IMS-AGW.
		explicit RTCP transport address	O	This information element is present if IMS-ALG wants explicitly control the reservation of RTCP transport address resources (for the remote endpoint) by the IMS-AGW.
		<u>RTP / RTCP transport multiplexing</u>	<u>O</u>	<u>This information element is present if IMS-ALG wants explicitly control the reservation of transport multiplexed RTP/RTCP port resources by the IMS-AGW.</u>
		Local cryptographic SDES attribute	C	This information element is present if IMS-ALG wants that the media is encrypted and/or integrity protected by the IMS-AGW (NOTE 4). It indicates the SDES local cryptographic parameters such as key(s).
		Remote cryptographic SDES attribute	C	This information element is present if IMS-ALG wants that the media is decrypted, and/or integrity checked by the IMS-AGW (NOTE 4). It indicates the SDES remote cryptographic parameters such as key(s).
		ECN Enable	O	This information element requests the IMS-AGW to apply ECN procedures.
		ECN Initiation Method	C	This information element specifies the ECN Initiation method and requests the IMS-AGW to perform IP header settings as an ECN endpoint, or indicates that ECN bits shall be passed transparently. It may be included only if ECN is enabled.
		Notify ECN Failure Event	C	This information element requests a notification if a ECN failure occurs due to ECN. It may only be supplied if ECN is enabled and the IMS-AGW acts as ECN endpoint.
		Extended RTP Header for CVO	O	This information element requests the IMS-AGW to pass on the CVO extended RTP header as defined by IETF RFC 5285 [23].
		Generic Image Attributes	O	This information element indicates image attributes (e.g. image size) as defined by IETF RFC 6236 [24].
Configure AGW Connection Point Ack	IMS-AGW	Context	M	This information element indicates the context where the command was executed.
		Bearer Termination	M	This information element indicates the bearer termination where the command was executed.
		Local IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall be prepared to receive user data For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream.

		Remote IP Resources	O	This information element indicates the resource(s) for which the IMS-AGW shall send data. For terminations supporting any combination of video, audio and messaging this IE shall contain separate resources per stream.
		Local Connection Address	O	This information element indicates the IP address and port number(s) on the IMS-AGW that the IMS user can send user plane data to. For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.
		Remote Connection Address	O	This information element indicates the remote IP address and port number(s) that the IMS-AGW can send user plane data to. For terminations supporting any combination of video, audio and messaging this may contain multiple addresses.
		Local cryptographic SDES attribute	C	This information element may be present only if it was contained in the request. It indicates the SDES local cryptographic parameters such as key(s)
		Remote cryptographic SDES attribute	C	This information element may be present only if it was contained in the request. It indicates the SDES remote cryptographic parameters such as key(s)
<p>NOTE 1: Remote Source Port and Remote Source Port Range are mutually exclusive.</p> <p>NOTE 2: One of those IEs shall at least be present when policing is required.</p> <p>NOTE 3: Additional streams may be added by the Configure AGW Connection Point procedure. The additional streams shall then carry the same IP Realm Identifier as the very first Stream.</p> <p>NOTE 4: This IE may only be present for access network terminations.</p>				

Editor's Note : The details of how the transparent indication included in ECN Control is subject of stage 3 specification. It also needs to be determined if this indication is needed on both incoming and outgoing terminations.

* * * End of Changes * * * *